

Review of Practical, Operational Aquaculture Training across the UK January 2020

NAFC on behalf of the Sea Fish Industry Authority

Angela Sutherland
24/9/2019

Contents	Page
Background	3
Overview	3
Available Practical / Operational Training	5
Findings	6
Finfish Companies	6
Shellfish Companies	7
Training Provision	8
Other Information Discovered	9
Concerns Over Legislation of Small Boats	9
Perceived Risks at Work	9
Reported Incidents by the HSE	10
Conclusions	11
Finfish and Shellfish	11
Finfish	11
Shellfish	11
References	12
Further Reading	13
Appendices	14
Appendix 1. Practical / Operational Training Identified by Interviewed Stakeholders	14
Appendix 2. Practical / Operational Courses from Training Providers Who Responded to Info Request	19
Appendix 3. UK Educational Establishments Offering Aquaculture-Related Courses (as of Nov. 2019)	23

Tables	Page
Table 1. Scale of UK Aquaculture Sector 2016	4
Table 2. Scale of Scottish Salmon Aquaculture 2016	4
Table 3. Practical / Operational Training Needs Identified by the 15 Aquaculture Companies Interviewed	6
Table 4. Improvement / Prohibition Notices Issued by the HSE to Aquaculture Operators	10

Acronyms

CoSHH	Control of Substances Hazardous to Health
FTE	Full Time Equivalent
HACCP	Hazard Analysis and Critical Control Point
HIE	Highlands and Islands Enterprise
HSE	Health and Safety Executive
IOSH	Institution of Occupational Safety and Health
LPG	Liquid Petroleum Gas
MCA	Maritime and Coastguard Agency
MSN	Merchant Shipping Notice
NEBOSH	National Examination Board in Occupational Health and Safety
PADI	Professional Association of Diving Instructors
PST	Personal Survival Techniques
RIDDOR	Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013
SAIC	Scottish Aquaculture Innovation Centre
SAIF	Scottish Aquaculture Industry Forum
SAMS	Scottish Association for Marine Science
SME	Small to Medium-Sized Enterprise

Background

This research was commissioned by Seafish to inform its planned development (in 2019/2020) of a training and guidance programme to support good occupational health and safety practices for UK aquaculture businesses.

Seafish has a long and established track record in supporting training for commercial fishermen and workers in the onshore sectors of the seafood industry. Health and safety is a key focus of its work, particularly in commercial fishing.

The training needs of the aquaculture sector have traditionally been created by Lantra¹, which has led the development and ongoing review of occupational standards, vocational qualifications and Apprenticeships. There is also no shortage of degree level courses covering the science of aquaculture. However, concerns have been raised by at events such as the Seafish Aquaculture Common Issues Group (ACIG²) regarding the health and safety of workers and the availability of relevant courses at the practical level.

Before commissioning any development work, Seafish wanted to better understand the sector's training needs and assess the availability and current provision of training. In June 2019 Seafish commissioned NAFC Marine Centre to undertake research and this report summarises its findings.

Overview

UK aquaculture covers many different methods of aquatic farming including growing Atlantic salmon in cages at sea, fresh water fish in ponds or tanks, rope cultivation of mussels, seeding and dredging of shellfish at sea, intertidal cultivation and harvesting of a variety of shellfish, bag cultivation of oysters, RAS farming systems and land based hatcheries. This report focuses on marine aquaculture only.

The bulk of marine aquaculture in the UK follows the coastline but is mainly concentrated in Shetland, Orkney, the Western Isles and West coast of Scotland. In the Seafish Report (Hambrey and Evans, 2016) it states that the distribution of activity in England is mainly in the north and south with significant oyster production and emerging mussel farming. Wales has significant re-laid mussel bed production associated with the Menai Strait and a strong research and development sub-sector in marine recirculation aquaculture systems (RAS) and the report says that NI has, one salmon farm, a fair number of trout farms along with oyster and mussel production in loughs and estuaries.

More background information and the Hambrey and Evans report specifically can be found on the Seafish website³.

¹ Lantra - <https://www.lantra.co.uk/about-us>

² ACIG - <https://www.seafish.org/article/aquaculture-common-issues-group/> Sept. 2018 ACIG minutes - https://www.seafish.org/media/1551716622-SeafishACIGFinalMinutes_180918.pdf

³ Seafish - <https://www.seafish.org/aquaculture/> / 'UK Domestic Aquaculture Reports' page - <https://www.seafish.org/article/uk-domestic-aquaculture-reports>

Table 1 shows Centre for Environment, Fisheries and Aquaculture Science (Cefas) figures for employment and production in aquaculture in 2016 (Cefas, pers. comm., 2019).

Table 1. Scale of UK Aquaculture Sector 2016

Area	No. of Employees	FTE Employees	No. of Enterprises	Tonnage (metric tonnes)	Value (£)
Scotland	2279	2048	194	179,076	797,318,943
England	737	552	213	7,384	25,611,291
Wales	100	84	29	3,550	4,957,264
N Ireland	169	118	37	4,158	8,637,512
UK	3285	2802	473	194,168	836,525,010

Note: More recent Cefas figures are currently available for UK aquaculture production and value, but 2016 figures have been used above as employment figures are also available for this year.*

**2017 Totals: Tonnage = 227,642; Value = £1,140, 589,517*

Figures indicate that the number of employees in UK aquaculture has remained broadly the same since 2012⁴ whilst production value has almost doubled in the years up to 2017.

Cefas figures (see Table 2) indicate that the UK salmon industry primarily occurs in Scotland with a small amount of “salmonids not elsewhere identified” shown in devolved authorities other than Scotland. There is salmon smolt production in the north of England, to feed into the Scottish industry, and there is also a little salmon grow-out in Northern Ireland.

Table 2. Scale of Scottish Salmon Aquaculture 2016

Sector	No. of Employees	FTE Employees	No. of Enterprises	Tonnage (metric tonnes)	Value (£)
Scottish Salmon	1780	1663	28	162,817	765,239,900

Note: Again, more recent Cefas figures are currently available for Scottish salmon production and value, but 2016 figures have been used above as employment figures are also available for this year.*

**2017 Totals: Tonnage = 189,707; Value = £1,050,976,780*

The salmon industry has undergone consolidation. In 2016 the 28 salmon companies were responsible for more than half the employees in the UK aquaculture sector with. At present, and according to the Marine Harvest Salmon Handbook 2018, five companies are responsible for 93% of the Scottish salmon industry. While the overall number of companies has reduced in Scotland, production has continued to rise.

The Seafish report (Hambrey and Evans, 2016) states that elsewhere in the UK, finfish and shellfish production in England, Wales and NI declined between 2010 and 2014 and has remained relatively stagnant. However, the report also indicates that there is scope for growth.

Outside the salmon industry most of the other aquaculture production companies are SMEs; often very small companies, including one-man businesses, sometimes in very rural areas.

⁴ Cefas - https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/405469/Aquaculture_Statistics_UK_2012.pdf

Available Practical / Operational Training

A table of practical / operational training is presented in Appendix 1 alongside responses from the 15 out of the 27 aquaculture companies contacted during this study⁵.

An initial list was created based on the information provided by salmon companies. This training list was then circulated to other aquaculture companies. These non-salmon companies were invited to amend the list to include other training they were doing and to give information on courses they wanted but found difficult to source in their local area.

The list was re-edited halfway through the project because it became apparent that finfish and shellfish required different lists. Unfortunately, this meant that some of the companies interviewed earlier did not get asked about training added by companies interviewed later.

Training providers identified by the stakeholders interviewed were:

Scotland:	SAMS, NAFC, Stirling University, Edinburgh University, Inverness College UHI, Salus Solutions, RBS Mentor, M&S, and JB Training and Lifting Solutions
England:	Lantra Award, Seafish, Sparsholt and South Devon College
Wales:	Seafish, PADI, Bangor University, Pembrokeshire College,
NI:	Lantra
UK	Aquafish Solutions (shellfish depuration)

⁵ Breakdown of the 15 aquaculture companies who responded: 6 oyster; 5 mussel; 3 salmon; 1 sea trout; 1 scallop

Findings

Table 3 details the training needs identified by respondents.

Table 3. Practical / Operational Training Needs Identified by the 15 Aquaculture Companies Interviewed

Training Needs Identified	Scotland	England	Wales	NI	Responses	No. Who Expressed Need
Forklift >5t	2			1	11	3
Forklift Rough Terrain	2				8	2
Capstan	2				8	2
Manual Handling	3			1	14	4
Crane/Sea Crane	4				10	4
Appointed Person training	1				2	1
First Aid	1				15	1
Sea Survival PST	1				13	1
Fire Fighting at Sea	1				13	1
Fire Warden	1				4	1
Quad bike or gator safety	1	1			5	2
CoSHH Training	1				12	1
Abrasive Wheels Training	2				11	2
MCA approved stability course	1				1	1
Auditor Training	1				1	1
Safe Dive Management	1		1		3	2
Basic Welding	1				3	1
Bivalve Purification Operations / Depuration	1			1	8	2
Chemical handling	2				10	2
Biotoxin Sampling	1				9	1
Food Safety principals	1				12	1
Food Hygiene HACCP	2				13	2
Listeria/ E. Coli/ Salmonella Awareness	1				13	1

Finfish Companies

Appendix 1 shows that salmon and marine trout companies conduct the greatest proportion of training. Those companies indicated that they were able to source local training easily or had established in-house courses to cover their needs.

Despite this, two of the four salmon and marine trout companies spoken to report a shortage of affordable capstan and sea crane training providers in Scotland.

Discussions indicated that larger finfish companies have worked hard to standardise training within their individual companies. However, there is still room for greater efficiency through standardising training across the industry and gaining industry accreditation so that certificates earned at one company could be carried forward to another, thereby avoiding the need to retrain unnecessarily after recruitment.

An example of increased perceived value of accreditation given by one company was, gaining MCA accreditation for an existing stability course.

Highlands & Islands Enterprise's (HIE's) Skills Review for the Aquaculture Sector in Scotland report⁶ also identifies inter-company standardisation and accreditation as a desired outcome.

When asked about training that might mitigate recurring accidents or incidents one company felt that, while accidents are rare, a beginner's technical package which included how to tie knots and how to handle knives safely would be very useful.

Going forward there is an understanding that there will be technical changes, e.g. with equipment, techniques used in farming and in maritime and environmental legislation. There is a general need to upskill their employees to be ready meet different demands.

An example given of training about to be required was the new MCA workboat code 5 radar and electronic navigation.

One company reported that in Norway salmon companies don't have to train new employees as much as they do in Scotland because new starts have already been practically trained through the state education vocational system, to a high standard.

In Scotland, salmon and sea trout companies in Scotland are using available apprenticeship schemes and other sectors are starting to follow. Currently aquaculture apprenticeships are only offered in Scotland. While some Scottish companies had not considered apprenticeships and others did not think apprenticeships were available in their area but said they wanted them.

Shellfish Companies

Most of the shellfish companies spoken to were small or very small businesses and they reported a low turnover of experienced staff. This led companies to feel they had less need for training. A few indicated that when they had recruited locally, they had difficulty in finding staff with the right skills. Either they were overqualified, with a masters or PhD but couldn't tie a knot and handle a boat, or they could handle a boat but didn't know anything about animal welfare or hygiene.

Shellfish companies also reported other difficulties:

- Taking on a member of staff that needed training in a remote area.
- Succession planning was difficult as it is difficult to take on young people when you don't offer a career and they have no skills.
- Not knowing what training was available in their area.
- Not knowing what training they should be doing (because they were new to the business or had not taken on staff before)

Wishing they had access to scientific research that could help their business (gain useful information on production methods in New Zealand or France, help with an issue of 3 years of poor harvest, help with new ventures e.g. to grow various types of seaweed etc.).

⁶ HIE - <http://www.hie.co.uk/regional-information/economic-reports-and-research/archive/skills-review-for-the-aquaculture-sector-in-scotland.html>

Review of Practical, Operational Aquaculture Training across the UK 2019

Aquaculture companies in England and Wales commented that there wasn't any aquaculture Apprenticeships available to them, but that if there were, they would be keen to take on apprentices.

An industry expert in NI advised that there were also no Apprenticeships available in NI, but he felt that companies there would not have considered them. If they were made available, the benefits would need to be explained to companies. The expert indicated that something similar to the French Brevet system (National Diploma) worked very well for French aquaculture, in training young people and giving them high level practical skills.

The Seafish report (Hambrey and Evans, 2016), states that "the critical shortage of skilled and motivated labour in the aquaculture industry needs to be addressed through better hands-on training and apprenticeship schemes".

Training Provision

Appendix 2 lists practical / operational courses available from providers who responded to an information request.

SAIC identified courses available throughout Scotland.

NAFC advised that their MA Aquaculture for Shellfish is now available and will be starting soon.

Colleges in England and Wales were interested in creating aquaculture apprenticeship's if funding was made available.

Aquaculture apprenticeships are only offered in Scotland. However, companies that have sites which are not Scotland-based can work with a Scottish training provider to allow their candidates to progress through the Scottish Modern Apprenticeship frameworks. However, financial contributions towards the costs of the qualification may vary depending on the residency of the candidate.

Across the UK there are specific degree and higher degree courses that are aquaculture specific, or include an aquaculture element, but they often lack the practical/operational skills needed by aquaculture personnel, especially those new to the industry.

Appendix 3 lists courses available at academic establishments across the UK.

Other Information Discovered

The UK has many aquaculture industry groups and forums⁷, particularly in Scotland but also (to a lesser degree) in England, Wales and NI. Regarding health and Safety Scotland has the Scottish Aquaculture Industry Forum (SAIF) which includes, HSE, Maritime and Coastguard Agency (MCA), industry experts and aquaculture companies. Aquaculture companies in England and Wales expressed an interest in having their own focus groups to share ideas, including those on health & safety. Seafish Wales indicated that there was an aspiration to create a focus group in Wales and felt it was likely to happen soon.

Concerns over Legislation of Small Boats

Shellfish companies across the UK were unsure if all their work boats required Maritime and Coastguard Agency (MCA) approval and certification. For example, if they use a small rowing boat from a pier to get to their work boat.

The MCA were approached and asked if all boats used for work needed MCA certification. Examples of various sizes and uses such as skiffs and rowing boats were given. Their response was:

“I depends if the vessel goes to sea or not. This can be ascertained from Merchant Shipping Notice (MSN) 1837⁸. If it goes to sea then it needs to be certified against the Workboat Code, regardless of size, if it is less than 24m. If it doesn't go to sea, then local authority requirements apply”.

MSN 1837 (MCA, 2017) defines 4 categories of water, A to D, that are not “at sea”. Anything outside these categories is “at sea”. Roughly speaking anywhere with a wave height of over 2 meters should be “at sea” but the report outlines of all the waters around the UK defining what is and what is not “at sea”. Each company using boats “not at sea” should find out what their local council requirements are for their boats.

Perceived Risks at Work

In order to ascertain whether the health and safety training companies were undertaking would mitigate the risks they had, companies were asked what they felt was their greatest risk or what recurring accidents did they have.

Shellfish companies reported man overboard, falling down hatches, slips trips, lone working in rural areas with no phone signal and injuries through lifting and long-term damage through lifting as staff members get older. One intertidal shellfish company would like to see the Seafish Intertidal Gatherers Course return.

One finfish company reported knife accidents and slips and trips as recurring accidents but otherwise finfish respondents felt their risks had been mitigated by safe practices and training.

⁷ Examples include: British Trout Association ([BTA](#)), Shellfish Association of Great Britain ([SAGB](#)), Scottish Salmon Producers Organisation ([SSPO](#)), Association of Scottish Shellfish Growers ([ASSG](#)), [Seafood Shetland](#), Scottish Aquaculture Industry Forum ([SAIF](#)), Aquaculture Representative Group Northern Ireland ([ARG](#)), English Aquaculture Leadership Group ([ALG](#)), Scottish Aquaculture Industry Leadership Group ([SAILG](#))

⁸ MSN 1837 - <https://www.gov.uk/government/publications/msn-1837-m-amendment-2-categorisation-of-waters>

Reported Incidents by the HSE

The HSE website was searched for reports of improvement and prohibition orders given specifically to Aquaculture companies.

Results from this search give an indication of health and safety issues that the HSE has found at various aquaculture sites but does not tell us if the issues were picked up during a spot check or because there was a reportable incident, injury or death.

Of the 20 different notices found on the HSE, 12 were for diving issues.

Table 4. Improvement / Prohibition Notices Issued by the HSE to Aquaculture Operators

Subject	Improvement	Prohibition	Total
Diving	9	3	12
Crane or other lifting equipment	2	0	2
Insufficient safety guard, fences or rails in place	2	1	3
Lone working	1	0	1
Hazardous substances	1	0	1
LPG safety	1	0	1

Members of SAIF advised that they had recently met and agreed to develop a Safe Diving Management course.

It is not possible to find UK statistics of RIDDOR incidents or fatalities specifically for the aquaculture industry as the HSE combines the figures with the rest of agriculture, forestry, horticulture and associated industries.

Figures made available to SAIF by HSE for the period March 2015 to February 2017 indicate a reduction in injuries regards Scottish aquaculture, however, “slips trips and being struck by an object remain major causes of injury within the industry” (Watterson, 2018).

Conclusions

Finfish and Shellfish

- Overall, companies did not report difficulties in finding staff with higher level educational qualifications but did find it more difficult to find people with useful technical skills.
- The industry, both finfish and shellfish, appears to indicate that it would benefit from apprenticeships across the UK despite availability being restricted to Scotland.
- Safe Dive Management is a course that appears to be needed, however, SAIF have indicated that they have already started to develop a course.

Finfish

- There is a need for increased access to capstan, crane and forklift training course places in Scotland.

Shellfish

- Companies indicated that manual handling over long periods was causing an issue as employees get older.
- Bivalve Purification Operations / Depuration training is still required, however, of the 8 shellfish companies that responded on this topic, two did not need depuration as the Coop was doing the operation for them and a third was planning to work with a company that would take over the responsibility.
- Small companies are less aware of employer health & safety requirements and are less likely to have anyone qualified in health & safety IOSH or NEBOSH. A leaflet explaining their obligations under HSE legislation and listing any essential training for their industry sector may be beneficial particularly to someone taking over an existing business or starting a new business.
- Many of the smaller companies were unaware of the aquaculture training available to them in their local area. Creating a full list of aquaculture training for the whole UK may be useful.

References

Ekosgen and Imami Development (2018). *Skills Review for the Aquaculture Sector in Scotland*. HIE Highland and Islands Enterprise, p1–71. Available at:

https://www.ekosgen.co.uk/docs/093_221_aquaculturereport_1538649993.pdf

Hambrey, J. and Evans, S. (2016). *SR694 Aquaculture in England, Wales and Northern Ireland*. Seafish, p1–17. Available at:

https://www.seafish.org/media/publications/FINALISED_Aquaculture_in_EWNI_FINALISED_-_Sept_2016.pdf

HIE (2019). *Highlands and Islands Enterprise* [online]. Available at: <http://www.hie.co.uk/regional-information/economic-reports-and-research/archive/maximar-science-and-innovation-audit.html> [Accessed 18 Sep. 2019]

Maritime and Coastguard Agency (2017). *MSN 1837 (M) Amendment 2. categorisation of waters*. [online] GOV.UK. Available at: <https://www.gov.uk/government/publications/msn-1837-m-amendment-2-categorisation-of-waters> [Accessed 18 Sep. 2019]

Watterson, A. (2018). *UK National Aquaculture Occupational Health and Safety Profile for FAO*, p1–42. Available at:

https://www.researchgate.net/publication/334108677_UK_NATIONAL_AQUACULTURE_OCCUPATIONAL_HEALTH_AND_SAFETY_PROFILE_FOR_FAO_ANDREW_WATTERSON_1_December_2018

Cefas, pers. comm., 2019. *2016 UK Aquaculture Production Tonnages and Value, plus 2016 employment figures*

Further Reading

Tegan Mor Fisheries Consultants (2015). *An Analysis of the Training Needs of the Northern Ireland Seafood Industry*. Seafish, p1–27. Available at: https://www.seafish.org/media/1449048/analysis_of_training_needs_of_the_ni_seafood_industry.pdf

The Scottish Government (2019). *Scottish shellfish farm production survey 2018*. [online]. Available at: <https://www.gov.scot/publications/scottish-shellfish-farm-production-survey-2018/> [Accessed 18 Sep. 2019]

Scottish Government, St. Andrew's House, Regent Road, Edinburgh EH1 3DG Tel: 0131 556 8400 ceu@scotland.gsi.gov.uk (2014). *Scottish Fish Farm Production Surveys: 1979 Onwards*. Available at: <https://www2.gov.scot/Topics/marine/Publications/stats/FishFarmProductionSurveys/OlderSurveys> [Accessed 18 Sep. 2019]

Health and Safety Executive website. *Fatal injuries in agriculture, forestry and fishing in Great Britain*. Available at: <http://www.hse.gov.uk/agriculture/pdf/ag-fatal-1617.pdf>

DAERA (2018). *Introduction to aquaculture*. Available at: <https://www.daera-ni.gov.uk/articles/introduction-aquaculture>

Review of Practical, Operational Aquaculture Training across the UK 2019

Appendix 1. Practical / Operational Training Identified by Interviewed Stakeholders

- Blank spaces indicate where companies either did not answer a question or were not asked a question
- Grey spaces indicate where companies advised that this training was not applicable to them

Type	Duration	Type of Aquaculture Company (Total No. = 15)														
		Mussels 1	Mussel 2	Oysters 1	Sea Trout 1	Mussel 3	Oyster 2	Salmon 1	Salmon 2	Oyster 3	Scallops 1	Oyster 4	Mussel 4	Oyster 5	Oyster 6	Salmon 3
Apprenticeships																
SVQ 2 Modern Apprenticeship in Aquaculture – SCQF Level 5		No	No	Yes - currently looking at it - NAFC	Yes - NAFC	Wants but not available	No but would be interested if it was available	Yes - NAFC	Yes - NAFC	No but would consider it in a year if it was available	No but would be interested if it was available	Hadn't thought of apprenticeships	Would consider apprenticeship	No but would be interested if it was available	No	Yes - External
SVQ 3 Modern Apprenticeship in Aquaculture – SCQF Level 7		No	No	No	Yes - NAFC	Wants but not available	No but would be interested if it was available	Yes - NAFC	Yes - NAFC		No but would be interested if it was available	Hadn't thought of apprenticeships	Would consider apprenticeship	No but would be interested if it was available	No	Yes - External
SVQ 4 Technical Apprenticeship in Aquaculture Management – SCQF Level 9		No	No	No	Yes - NAFC	Not available	Not available	No	Yes - NAFC	Not available	Not available	Hadn't thought of apprenticeships	Would consider apprenticeship	Not available	No	Yes - External
Short Courses																
Fish Welfare - RSPCA Freedom Foods	1 - 2 day		M&S course		In House			In house & external	Yes - NAFC							External
Sea Lice Identification and Recording	½ day				In House			In House	Yes - NAFC							Internal/ External
Tesco CoP (inc. Salmon, open water and Hatchery Operation Standards)								In House								
Biosecurity in Aquaculture	½ day	No	No	Yes	In House	Yes - SAMS	In House	In House	In House or NAFC	No	No but interested	MD has but not staff	Yes	Don't know	Wants this course	Internal
Noise Awareness									Salus Solutions							Internal
Fish Farm Containment - Introduction	1 day				In House			External	Yes - NAFC							Internal
Fish Health - Introduction	1 day				In House			In House	Yes - NAFC							Internal/ External
Fish Health - Advanced	2 day				Stirling University			In House	Yes - NAFC							

Review of Practical, Operational Aquaculture Training across the UK 2019

Internal Auditing Techniques for Aquaculture	1 day				In House			In House	Yes - NAFC								
RAS Water Quality Awareness	½ day				In House			No	Yes - NAFC								Internal/ External
Environmental Awareness	½ day				In House			No	Yes - NAFC								Internal/ External
Fish Vaccination	on line				In House			No	Fish Vet Group								
Gill Health AGD & PGD	½ day				In house vet			In House	In House								Internal/ External
Bivalve Purification Operations / Depuration		Will no longer need soon					Coop does this for them			Seafish	Yes	In House	Yes but no longer doing it	Yes - Seafish	Wants this course		
Health & Safety																	
First Aid	1 - 4 day	Yes - NAFC	Yes - NAFC	Yes	In House	Yes	Seafish	External	Yes - NAFC	Seafish	Yes	Needs refresher	Yes	Yes	Yes	Yes	External
Sea Survival PST	1 day	Yes	Yes - Everyone NAFC	Yes	In House	Yes	Seafish	External	Yes - NAFC	Yes	Yes	Needs refresher	Yes				External
Fire Safety Awareness (workplace fire drills etc.)	½ day	No	In House	In House	Various Providers	landlord does it		In house & external	Yes - NAFC	Seafish	No						Internal/ External
Confined Spaces Safety Awareness	1 day	Yes			In House - includes permit to work	No		External	Yes - NAFC								Internal/ External
Manual Handling	½ day	No but needs	No	Yes	In House	Yes	No but needs	External	Yes - NAFC	No	No	Needs Training		No	In House	Internal	
Fire Warden	1 day								Train Shetland			Needs Training	No	No			
Defibrillator Training	½ day								In House								
Fire Fighting at sea	1 day	Yes	Yes - NAFC	Yes	Various external providers	Yes	Yes	External	Yes - NAFC	Yes	No	Needs Training	Seafish				External
CoSHH	½ day	No but needs	No	No	External	No	In House	In House	NAFC or Salus Solutions	No	No	Yes					Internal
Fire Safety	½ day	Yes	No	In house	Various external providers	No	External	External	NAFC or Salus Solutions	No	No	No					Internal
NEBOSH Health & Safety at Work	3 day	No	No	H&S manager has this	Edinburgh University and others	No	MD is doing an on-line course	External	NAFC or Salus Solutions	No	No	No	No	Don't know	No	No	External

Review of Practical, Operational Aquaculture Training across the UK 2019

IOSH Working Safely	1 day	No	No	No	RBS Mentor	No		In house & external	NAFC or Salus Solutions	No	No	Needs Training	No	Don't know	No	External
IOSH Managing Safely	3 day	No	No	No	RBS Mentor	No		External	NAFC or Salus Solutions	No	No	Needs Training	No	Don't know	Would be interested in this course	External
Environmental Protection Regulations (SEPA EPA etc.)	½ day	No	No	No	Internal Compliance Manager trains staff	No	No	No	No	No	No	Wants this training	No	Don't know	No	
Dangerous goods at sea	Online				External Tutor as and when required			External	No							Internal
Risk Assessment	1 day	Yes NFU	Yes NFU	In house	In House	No	In House	In House	In House	Seafish	In House			No	No	Internal
Working Safely at Heights	½ day	No	No		In House	No		External	Salus Solutions		No					Internal
Listeria Awareness				In House	In House			In house & external	No	No	Yes	Not needed	No			External
Safe Diving Management					Yes			External			Yes					
H2O2 Handling and Awareness	1 day								Aqua Pharma							
Appointed Person									JB Training and Lifting Solutions							Internal
Operational																
RYA Powerboat level 2	2 days		Yes	Yes	In House	Yes	Yes	In house & external	Yes - NAFC	No		Yes				External
RYA Advanced Power Boat										No	Yes	No				External
Workboat Skipper part 1	10 days		Yes	Yes	In House	Yes	Yes	No	Yes - NAFC	No		No				External
Workboat Skipper part 2	4 days		Yes	Yes	In House	Yes		No	Yes - NAFC	No		No				External
Professional Boatman Level 2 - RYA Day Skipper	9 day		Yes	Yes	In House	Yes	Yes	In house & external	Yes - NAFC	No		No				External
Professional Boatman Level 3 - RYA Coastal Skipper	12 day		Yes	Yes	In House	Yes		In house & external	Yes - NAFC	No		No				External
Class 1 Fishing Skipper													Yes			External

Review of Practical, Operational Aquaculture Training across the UK 2019

Diesel Engine course	1 day				Yes		No	External	Yes - NAFC	No		No				
MCA Approved Engine Course (AEC)	5 days			No	Yes a few staff	Yes	No		Yes - NAFC	No	Yes	No	Yes			External
Short Range (VHF) Radio Operators Certificate (SRC)	2 days		Yes	Yes	In House	Yes	Yes	In house & external	Yes - NAFC	DSE	Yes	No	Yes			External
Sea Crane including banksman and slinger	3 days	Yes	Expired	No	Lantra - In house	No		In House	In House		No		No			External
Slinger and Signalling Training	1 day	Yes	Expired	No	In House	Yes		In House	In House		No		External			External
Capstan Safety Awareness	½ day				In House			In House	In House	No	No					External
Dead Basket Management	½ day				In House			In House	No	No	No					External
Fork Lift Operation >5 ton	1 - 4 days	Yes	Expired	Yes	Yes	No		In house & external	In House	No	No		External			External
Rough Terrain Fork Lift Inc. telehandler	1 - 4 days		Expired	Yes	Lantra - In house			In house & external	In House	No	No					External
Banksman Training	3 days	No	No	No	In House	No		External	In House	No	In House		No			External
Abrasive Wheels	1 day	No but needs	No		External		No	External	In House	No	Yes	Wants Training	No			External
RYA Professional Practices & Responsibilities	On line	Yes	Yes		Yes	one	Yes	In house & external	Yes - NAFC	No	Yes	Doesn't know				External
High Speed Craft	2 days		No	No	N/A			No		No	Yes	Needs training	No			External
Pressure Washing Safety Awareness	½ day	No	No	In house	In House	No	No	External	No	No	In House	In House	In House	Don't know	In House	External
Life Jacket Inspection and Examination	½ day	No	No	No	In House	No	Internal	In House	In House	No	No	Needs training	Yes		External	Internal
Quad bike or Gator Safety							No	No		Has one but no training		Needs training		Yes		
Tractor Maintenance and safety								External		2 tractors no training						
Trailer Safety		Yes			External		No	No	No	Yes	Yes	Not needed			Needs	External
Basic Welding												Wants Training	Local College			External
RYA Radar									Yes - NAFC							

Review of Practical, Operational Aquaculture Training across the UK 2019

Workboat Stability									Yes - NAFC							
Installation, Inspection and Maintenance of Anchors, Moorings and Cage Systems									In House							
Food Processing																
Listeria/ E. Coli / Salmonella Awareness	½ day	No	No	In house	In house	No		In house & external	Yes - Salus Solutions	SSMG	Yes	Wants Training	Yes	Don't know		Internal
Food Hygiene including HACCP	½ day	Yes - managers	In House	Yes		On Line		In house & external	Yes - Salus Solutions	Yes	Yes	Wants Training	Yes	Yes	Wants this course	Internal
Chemical Handling	½ day	No but needs	No			No		External	Yes - Salus Solutions	No	Yes	Needs	No			External
Biotoxin Sampling and Testing		Yes - managers	No			No				Yes but Coop and local food standards do testing	Yes	Wants Training	Yes	Yes	External	
Sustainability Principals	½ day	No	No	In house		No			Salus Solutions	No	No	Not needed	Yes	No	Don't know	Internal
Food Safety Principals	½ day	Yes	No	In house		No			Salus Solutions	No	Yes	Wants Training	Yes	Don't know	Yes	Internal

Appendix 2. Practical / Operational Courses from Training Providers Who Responded to Info Request

- *Pale yellow spaces indicate the provider was asked if they provided this training*
- *Blank spaces indicate the provider was not asked if they provided this training*

Qualifications/Courses	South Devon College https://www.southdevon.ac.uk/	NAFC Marine Centre https://www.nafc.uhi.ac.uk/	SAIC https://www.scottishaquaculture.com/	Sparsholt https://www.sparsholt.ac.uk/	Lantra Awards certified courses Lantra Framework https://www.lantra.co.uk/ https://www.frameworksolutions.lantra.co.uk/	Pembrokeshire College https://www.pembrokeshire.ac.uk/my-college/	Seafish https://www.seafish.org/ http://seafoodacademy.org/	Aquafish Solutions Ltd. http://www.aquafishsolutions.com/
Apprenticeships								
SVQ 2 Modern Apprenticeship in Aquaculture – SCQF Level 5		Yes			Lantra Framework - Inverness College UHI /NAFC			
SVQ 3 Modern Apprenticeship in Aquaculture - SCQF Level 7		Yes			Lantra Framework - Inverness College UHI /NAFC			
SVQ 4 Technical Apprenticeship in Aquaculture Management - SCQF Level 9		Yes			Lantra Framework - NAFC			
Sea Fishing (framework) apprenticeship	Yes	Yes						
Workboat (crewmate) apprenticeship	Yes							
Port Operative apprenticeship	Yes							
Short Courses								
Fish Welfare - RSPCA Freedom Foods		Yes						
Sea Lice Identification and Recording		Yes						
Tesco CoP (inc. Salmon, open water and Hatchery Operation Standards)								
Biosecurity in Aquaculture		Yes	Yes	Yes				
Noise awareness								
Fish Farm Containment – Introduction / Installation, Inspection and Maintenance of Anchors, Moorings and Cage Systems		Yes						
Fish Health - Introduction		Yes	Yes	Yes				
Fish Health - Advanced		Yes	Yes	Yes				
Internal Auditing Techniques for Aquaculture		Yes						
RAS Water Quality Awareness		Yes						
Environmental Awareness		Yes						
Fish Vaccination		Yes						
Gill Health AGD & PGD		Yes						
Bivalve Purification Operations / Depuration							1 day Operations 1 day Inspections (EHOs)	Yes

Health & Safety								
First Aid	In House	Yes	Yes	Yes	Various Lantra Award courses - 3 day Level 3 Award in First Aid at Work; 1 day Level 3 Award in Emergency First Aid at Work; Emergency First Aid at Work (training with assessment); 3 day First Aid at Work, etc.	Yes		
Sea Survival PST		Yes						
Fire Safety Awareness (workplace fire drills etc.)	In House	Yes						
Confined Spaces Safety Awareness		Yes			Lantra Awards 2 courses - Working in Medium Risk Confined Spaces, and Working in Low Risk Confined Spaces			
Manual Handling	In House	Yes	Yes	Yes				
Fire Warden		Yes						
Defibrillator Training		Yes						
Fire Fighting at sea	External provider	Yes with HIAL						
Fire Fighting		Yes Seafish			Lantra Awards - Customised Provision (Lantra accredited) for Wildfires			
CoSHH						Yes		
Fire Safety	External Provider	Yes						
NEBOSH Health & Safety at Work		Yes with Train Shetland	Yes	Yes		Yes		
IOSH Working Safely		Yes with Train Shetland				Yes		
IOSH Managing Safely		Yes with Train Shetland				Yes		
Health & Safety							½ day Introductory Health & Safety 1 day Elementary Health & Safety (e-Learning)	
Environmental Protection Regulations (SEPA EPA etc.)								
Dangerous goods at sea								
Risk Assessment						Yes		
Working Safely at Heights	In House	Train Shetland			Lantra Awards - 2 courses; 1 day Level 3 Awards in Working Safely at Height, and 1 day Health & Safety - Working at Height	Yes		
Listeria Awareness		Yes						
Safe Diving Management								
H202 Handling and Awareness								
Lift Supervisor					Lantra Awards - Customised Provision (Lantra accredited) Lifting Operations Supervisor			

Appointed Person			Yes	Yes	Lantra Awards - Customised Provision (Lantra accredited) Appointed Person - Planning Lifting Operations			
Operational								
RYA Powerboat level 2	In House	Yes						
RYA Advanced Power Boat		Yes						
Workboat Skipper part 1	Apprentice ships	Yes						
Workboat Skipper part 2		Yes						
Professional Boatman Level 2 - RYA Day Skipper	In House	Yes						
Professional Boatman Level 3 - RYA Coastal Skipper	In House	Yes						
Diesel Engine course								
MCA Approved Engine Course (AEC)		Yes						
Short Range (VHF) Radio Operators Certificate (SRC)	In House	Yes						
Sea Crane including banksman and slinger					Lantra Awards - Cranes; boat, pier or both			
Slinger and Signalling Training					Lantra Awards			
Capstan Safety Awareness		Yes			Lantra Awards - covered in winch course			
Dead Basket Management								
Fork Lift Operation <5 ton		Yes			Various Lantra Awards courses - Level 2 Award in Fork Lift Truck (counterbalance) Operations, Counterbalance Lift Trucks, Reach Lift Trucks, Sideloader Lift Trucks, Industrial Telescopic Lift Trucks and Pivot Steer Lift Trucks			
Rough Terrain Fork Lift <5 ton Inc. telehandler			Yes	Yes	Lantra Awards - 3 courses; Rough Terrain Masted Lift Trucks (J1); Rough Terrain Telescopic Lift Trucks - training with assessment or assessment only			
Banksman Training								
Abrasive Wheels		Yes			Lantra Awards			
RYA Professional Practices & Responsibilities								
Pressure Washing Safety Awareness		Yes						
Life Jacket Inspection and Examination		Yes						
Quad bike Safety			Yes	Yes	Lantra Awards - various ATV courses; Sit-astride, sit-in conventional steer, sit-in skid steer (wheeled) and Sit-in Skid Steer (Tracked)			
Tractor Maintenance and safety					Lantra Awards - tractor driving courses, rather than maintenance			

Trailer Safety					Lantra Awards - Trailer Towing/handling courses; off/on-road, off and on-road and trailer handling			
Basic Welding		Yes						
RYA Radar		Yes						
Workboat Stability		Yes						
Food Processing								
Listeria/ E. coli / Salmolela Awareness								
Food Hygiene including HACCP			Yes	Yes		Yes	½ day Introduction to HACCP 1 day Elementary HACCP	
Chemical Handling								
Biotoxin Sampling and Testing								
Fish Quality Assessment							1 day Introductory 5 day Advanced	
Fish Smoking							1 day Introductory 2 day Basic	
Customer Service Skills							e-Learning	
Knife Skills and Fish Filleting Skills							Yes 1 - 5 days	
Sustainability Principals								
Food Safety Principals						Yes	½ day Introductory Food Hygiene 1 day Elementary Food Hygiene (e-Learning) 3 day Intermediate Food Hygiene (e-Learning)	

Appendix 3. UK Higher Educational Establishments Offering Aquaculture and Aquaculture-Related Courses (as of Nov. 2019)

Scotland	Courses	Links	Phone
Aberdeen University	<ul style="list-style-type: none"> Undergraduate – Applied Marine Biology and Aquaculture Marine Biology BSc 	https://www.abdn.ac.uk/registry/courses/course/zo3812	Tel: 01224 272000
Glasgow University	<ul style="list-style-type: none"> Marine and Freshwater Biology BSc/MSci Microbiology BSc/MSci Life Sciences MSc (Research) Animal Welfare Science, Ethics and Law MSc Zoology BSc/MSci Marine & Freshwater Biology BSc/MSci Medical Genetics & Genomics MSc (Med Sci) Earth Science BSc/MSci (and research) Sustainable Water Environments MSc Ecology & Environmental Biology MRes Environment & Sustainable Development MSc Animal Ecology Environmental Research Animal Ecology PhD 	https://www.gla.ac.uk/study/search/?query=aquaculture&level=&mode=&subject=	Tel: 0141 3302000
Herriot-Watt University	<ul style="list-style-type: none"> Marine Biology BSc (Hons) Marine Biology & climate Change MSc Biological Sciences BSc (Hons) Biological Sciences (Microbiology) BSc (Hons) Research into vaccine development and testing for aquaculture. 	https://search.hw.ac.uk/s/search.html?collection=programmes&query=marine&facetScope=f.Level%257Ccourselevel%3DUndergraduate	Tel: 0131 449 5111
UHI – Inverness College	<ul style="list-style-type: none"> Aquaculture Management SVQ4 Aquaculture, Environment and Society MSc Marine Science BSc (Hons) Modern Apprenticeships 	https://www.uhi.ac.uk/en/courses/ https://www.uhi.ac.uk/en/business/apprenticeships/ma/	Tel: 01463 279190
NAFC Marine Centre UHI	<ul style="list-style-type: none"> Various short practical /operational courses for aquaculture Modern apprenticeships for aquaculture (Level 5 to 9) 	https://www.nafc.uhi.ac.uk/courses/ https://www.nafc.uhi.ac.uk/courses/aquaculture-apprenticeships/	Tel: 01595 772000
Napier University	<ul style="list-style-type: none"> Marine & Freshwater Biology (Advanced Entry) – Undergraduate, Full-time and Part-time BSc (Hons) Marine & Freshwater Biology, Full-time and Part-time, BSc (Hons) 	https://www.napier.ac.uk/courses?q=aquaculture	Tel: 0333 9006040
St Andrews University	<ul style="list-style-type: none"> Marine Biology BSc (Hons) Marine Biology MMarBiol (Hons) Fe-He Pathway to Science – Pathway to BSc (Hons) Marine Ecosystem Management MSc Marine Mammal Science MSc Statistical Ecology MSc Sustainable Aquaculture – Distance Learning PGDip/MSc Sustainable Aquaculture – Distance Learning (Jan 2020 PG entry) Certificate Sustainable Aquaculture – Distance Learning - modular 	https://www.st-andrews.ac.uk/subjects/marine-biology/	Tel: 01334 462150
Stirling University	<ul style="list-style-type: none"> Sustainable Aquaculture MSC, Aqua Pathology MSC Aquatic Veterinary MSC CPD Courses <ul style="list-style-type: none"> Fish biology, anatomy and physiology Salmon life cycle and smolt production Handling techniques, dissection and tissue sampling Stress, health and disease Fish sentience, behaviour and welfare Why welfare pays Main diseases and pathogens Preventive and therapeutic strategies How vaccines work Sea lice monitoring and control Managing gill problems Biosecurity, veterinary health and welfare plans and record keeping Industry standards, good practice and legislation Practical feed production Aquatic animal reproduction and genetics Aquatic animal production systems Aquaculture in practice Aquaculture systems engineering Epidemiology and health control Aquatic animal biology and health 	https://www.stir.ac.uk/courses/?filter_level=Postgraduate,Undergraduate&query=aquaculture	Tel: 01786 473171

Review of Practical, Operational Aquaculture Training across the UK 2019

	<ul style="list-style-type: none"> • Business and financial management • Aquatic animals and the environment • Advanced environmental management • Biodiversity and sustainable aquaculture • Ecotoxicology • Livelihoods and aquatic re-source management • Policy planning and management • Geographic information systems • Fish health and welfare (new course) 		
England	Courses	Links	Phone
Cornwall College	<ul style="list-style-type: none"> • Marine Biology & Ecology Diploma Level 3 • Fish Studies 60 credit Diploma • Marine Conservation Diploma Level 2 • Gamekeeping Certificate Level 2 • Applied Marine Zoology BSc (Hons) • FDSC Marine Conservation • FDSC Marine Science 	https://www.cornwall.ac.uk/search/?s=Aquaculture	Tel: 0330 1232523
Easton and Otley College	<ul style="list-style-type: none"> • HACCP 	https://www.eastonotley.ac.uk/courses	Tel: 08000 224556
Hadlow College	<ul style="list-style-type: none"> • Level 1 Qualification in Land-Based Studies (Fisheries) • Level 2 Diploma in Fisheries • Level 3 Extended Diploma in Fisheries • Aquaculture & Fisheries Management FdSc • Aquaculture & Fisheries Management BSc (Hons) • Introduction to Fisheries Management • Introduction to Setting up and Maintaining Aquariums • Introduction to spawning Carp/Koi 	https://www.hadlow.ac.uk/courses/fisheries-management	Tel: 01732 850551
Harper Adams University	<ul style="list-style-type: none"> • HACCP • Certificate Food Safety 	https://www.harper-adams.ac.uk/courses/undergraduate/subject-areas.cfm	Tel: 01952 820280
Hull University	<ul style="list-style-type: none"> • Marine Biology BSc • Marine Environmental Management MSc 	https://www.hull.ac.uk/faculties/subjects/biological-science.aspx	Tel: 01482 346311
Liverpool University	<ul style="list-style-type: none"> • Marine Biology BSc (Hons) • Marine Biology with Oceanography BSc (Hons) • Marine Biology MMarBiol (Hons) • Ocean Sciences BSc (Hons) • Biological Sciences (with a Foundation Year) leading to BSc (Hons) • Geography and Oceanography BSc (Hons) • Marine Planning and Management MSc 	https://www.liverpool.ac.uk/	Tel: 0151 7945927
Newcastle University	<ul style="list-style-type: none"> • Marine Zoology BSc (Hons) • Zoology MBiol (Hons) • Marine Biology BSc (Hons) 	https://www.ncl.ac.uk/	Tel: 0191 208 6000
Plymouth University	<ul style="list-style-type: none"> • Sustainable Aquaculture Systems, Full-time and Part-time, MSc • Marine Biology BSc (Hons) • Marine Conservation MSc • Marine Sciences ResM/MPhil/PhD • Applied Marine Science MSc/MRes • Marine Biology and Coastal Ecology BSc (Hons) • Marine Biology and Oceanography BSc (Hons) • Ocean Science and Marine Conservation BSc (Hons) 	https://www.plymouth.ac.uk/study	Tel: 01752 600600
South Devon College	<ul style="list-style-type: none"> • Environmental Science A Level • RYA Powerboat Handling Level 2 • RYA Diesel Engine Maintenance • First Aid • Fire Safety Awareness • Working Safely at Heights • Manual Handling 	https://www.southdevon.ac.uk/	Tel: 08000 380123
Southampton University	<ul style="list-style-type: none"> • Marine Biology BSc/MSci 	https://www.southampton.ac.uk/	Tel: 02380 595000
Sparsholt University	<ul style="list-style-type: none"> • Aquaculture and Fishery Management BSc (Hons) • Marine Ecology and Conservation FdSc • Sports Fisheries and Aquaculture Degree FdSc • Applied Aquaculture and Sports Fisheries MSc 	https://www.sparsholt.ac.uk/subject/fishery-aquaculture-marine-studies/ The 'standard' short courses like First Aid, Health & Safety, Forklift etc. can be found here and booked with the Admissions team https://www.sparsholt.ac.uk/wp-content/uploads/2019/08/PT-Prospectus-2019-20.pdf	Tel: 01962 776441
Spartsholt College	Short Courses <ul style="list-style-type: none"> • Various short practical /operational courses for aquaculture 	The bespoke aquaculture courses on fish health etc. tend to be organised directly between the company looking for the training and the relevant member of staff.	
York University	<ul style="list-style-type: none"> • Marine and Environmental Management MSc 	https://www.york.ac.uk/study/	Tel: 01904 320000

Wales	Courses	Links	Telephone
Bangor University	<ul style="list-style-type: none"> • Marine Biology BSc (Hons) • Marine Biology and Zoology BSc (Hons) • Marine Vertebrate Zoology BSc (Hons) • Applied Marine Biology BSc (Hons) • Marine Biology and Oceanography BSc (Hons) • Geological Oceanography BSc (Hons) • Ocean Science BSc (Hons) • Marine Environmental Studies BSc (Hons) • Applied Terrestrial and Marine Ecology BSc (Hons) Also with placement year • Ocean and Geophysics BSc (Hons) • Physical Oceanography MSci • Geological Oceanography MSci • Marine Biology MSci • Marine Biology and Oceanography MSci • Marine Biology and Zoology MSci • Marine Vertebrate Zoology MSci • Physical Geography and Oceanography BSc (Hons) 	<p>https://www.bangor.ac.uk/</p>	Tel: 01248 351151
Swansea University	<ul style="list-style-type: none"> • Marine Biology BSc (Hons) • Environmental Biology: Conservation & Resources Management MSc • Zoology BSc (Hons) • Biological Science with deferred choice of specialisation BSc (Hons) 	<p>https://www.swansea.ac.uk/</p>	Tel: 01792 205678
Pembrokeshire College	<p>A variety of short courses including:</p> <ul style="list-style-type: none"> • First Aid • CoSHH • Nebosh • IOSH Working Safely • IOSH Managing Safely • Risk Assessment • Working Safely at Heights • HACCP • Food Safety principals 	<p>https://www.pembrokeshire.ac.uk/full-time-courses/</p>	Tel: 01437 753000
Northern Ireland	Courses	Links	telephone
Queens University	<ul style="list-style-type: none"> • Marine Biology MSci • Marine Biology BSc • Marine Biology with Professional Studies MSci • Marine Biology with Professional Studies BSc 	<p>https://www.qub.ac.uk/courses/</p>	Tel: 02890 245133